

PROPOSED MEETING AGENDA OU6 RFI/RI
MARCH 25, 1993 AT EPA

- 8.30-8:45 I. INTRODUCTION - NORMA CASTANEDA, PETE LAURIN
- 8 45-9:15 II. RISK ASSESSMENT - RICK ROBERTS, PAT WESTPHAL
- 9:15-9.45 III. FIELD OPERATIONS - SUSAN BUTH, JOHN JEHN

- A. INTRODUCTION
B. FIELD SCREENING
C. SAMPLING

- 1 IHSS 141 - SLUDGE DISPERSAL AREA
- Surficial Soil Sampling
 - Monitoring Well

- 2 IHSS 143 - OLD OUTFALL
- Surficial Soil Sampling
 - Soil Borings
 - Monitoring Wells

- 3 IHSS 156 2 - SOIL DUMP AREA
- Surficial Soil Sampling
 - Soil Borings
 - Monitoring Wells

9:45-10 00 Break

- 10 00-11 00
- 4 IHSS 165 - TRIANGLE AREA
- Surficial Soil Sampling
 - Soil Borings and Cores
 - Monitoring Wells
- 5 IHSS 166 - TRENCHES A, B, AND C
- Soil Borings
 - Monitoring Wells
- 6 IHSS 167 - NORTH, POND, AND SOUTH SPRAY FIELD AREA
- Surficial Soil Sampling
 - Soil Borings
 - Monitoring Wells
- 7 IHSS 216.1 - EAST SPRAY FIELD AREA
- Surficial Soil Sampling
 - Soil Borings
 - Monitoring Wells
- 8 MONITORING WELLS

PROPOSED MEETING AGENDA OU6 RFI/RI (CONTINUED)
MARCH 25, 1993 AT EPA

- 10 00-11.00 (Continued) 9 IHSS 142.1-9 & 142.12A - A AND B SERIES
PONDS
- Surface Water and Sediment Sampling
 - Dry Sediments
 - Monitoring Wells
- 11:00-11.15 IV. FUTURE FIELD OPERATIONS, STREAM SAMPLING - PETE
LAURIN
- 11.15-11.30 V GENERAL DISCUSSION AND ADJOURN

ou 6 Status Review - at EPA
March 25, 1993

DATE _____

PROJECT NO _____

PAGE NO _____ OF _____ BY _____

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JOHN LEHN	WOODWARD-CLYDE	966-5356
Bill Fraser	EPA	294-1081
HARLEN AINSWORTH	CDH	692-2337
BONNIE LAVELLE	EPA	294-1067

MEETING MINUTES

MEETING DATE March 25, 1993

MEETING LOCATION EPA Office, Denver Place, Downtown Denver

ATTENDEES Bill Fraser (BF) EPA
Bonnie Lavelle (BL) EPA
Harlen Ainscough (HA) CDH
Diane Niedzwiecki (DN) CDH
Norma Castaneda (NC) DOE/ERD
Pete Laurin (PL) EG&G
Rick Roberts (RR) EG&G
Susan Buth (SB) W-C
John Jehn (JJ) W-C
Patricia Westphal (PW) W-C
Jon Pierre Girod (JG) W-C

PURPOSE OF MEETING To discuss the status of Operable Unit 6 (OU6) at the Rocky Flats Plant and to review the OU6 field investigation and risk assessment activities

MINUTES The meeting began at approximately 8 45 am, and adjourned at approximately 11 00 am

NC introduced the meeting saying that all present have mutual goals, and that this meeting served to keep all up to date on OU6

PL introduced the agenda (attached) stating the meeting would cover risk assessment and the field program. The Environmental Evaluation (EE) is not included in today's meeting but will be the subject of another meeting in the future. BF suggested that an EE meeting could cover both OU5 and OU6 at the same time. Covering both OUs would be more efficient.

RR introduced PW. PW presented proposed exposure scenarios for OU6 (A packet of copies of overheads, OU6 conceptual site model, and OU6 map were passed out to all meeting participants). Potential receptors have been selected following EPA guidance. The receptors were described as follows:

- Current off-site resident - current resident at the nearest downwind location
- Current on-site worker - an example would be a security guard
- Future on-site worker - an office worker at a future office building on OU6
- Future on-site construction worker - this person would be exposed to subsurface soils
- Future on-site eco-worker - this scenario would capture outdoor exposure to creeks, ponds and surface soil
- Future on-site resident - This scenario may not be a probable future use but it provides an upper bound scenario
- Future off-site resident - This would be a resident at Walnut Creek and Indiana Street

DN asked if the risk assessment would take into consideration the nearest off-site resident with exposure to Walnut Creek. PW responded that the exposure would be captured in the on-site

worker scenario and the future off-site resident scenario

DN asked how the scenarios would be assessed, by IHSS? PW and RR stated this would be discussed later

BL asked why the future on-site commercial/industrial worker had been eliminated PW responded that this is covered by the future on-site office worker BL asked why off-site receptors should be included since these would be covered by OU3 RR responded that OU6 could contribute to off-site risks not addressed by OU3 BL stated that they were trying to include the area west of Indiana Street in OU3 RR stated that it might be included in the Comprehensive Risk Assessment

PW started description of exposure routes for each receptor BF asked if these were the same as OU1 and OU2, in which case they need not be repeated. RR stated that the exposure routes are similar to OU1 and OU2, which may change during negotiations currently in process OU6 also includes stream and pond sediments which may not be addressed in other OUs PW reviewed overheads for current off-site resident, current on-site worker, future on-site worker, and future on-site construction worker BL asked if the exposure for future on-site construction worker will be sub-chronic PW stated it is currently under discussion for other OUs but would likely follow guidance PW described exposure routes for a future on-site eco-worker, and a future on-site resident The resident does not include exposure to groundwater since groundwater in OU6 does not appear to be suitable for water supply The exposure routes for a future off-site resident are the same as for the current off-site resident with the addition of sediments and surface water in Walnut Creek

HA asked if the risk assessment would look at the worst case IHSSs, such as the Triangle Area Does it take IHSSs into account? RR began his discussion on exposure areas He is proposing an operable unit risk assessment Beginning with the surface water pathway, exposure to any surface water location is a probabilistic event and is OU wide The same is true of inhalation, air will be inhaled from all the IHSSs For soil ingestion, the assessment will use reasonable maximum exposures with (95% upper confidence levels on the mean across the entire unit DN - Will you average everything in? RR - Yes DN - Then will you look at each IHSS, like the Triangle Area and a house on that site? RR - No, the worst case is already represented since the sampling was IHSS specific BL - In effect, won't you pull everything in with your chemicals of concern (COCs)? RR- yes DN stated that she was concerned about dilution, and the potential to dilute out COCs using an OU-wide approach RR stated that "hot spots", which are part of the guidance, would be evaluated

HA stated that the public may only care about the risks at one specific residential location How will you assure you are protecting the public at that point? RR reviewed the contaminant concentration curve with the 95% UCL and reviewed guidance EPA had selected all the IHSSs to be the OU HA - What if each IHSS were an OU? You would do individual risk assessments then RR - True, but the IAG specified 16 OUs at Rocky Flats

BL stated that guidance allows you to evaluate the whole site, but you must look at hot spots, it is not reasonable to look at long term exposures to maximum concentrations RR stated that the risk assessment will look at "waste-related hot spots" and then do spatial analysis HA stated that the IHSSs are the concern DN - Are you going to determine IHSS-specific risks? RR - No, because exposure, such as the eco-worker, will not be localized to an IHSS HA - Residents are getting exposed at a specific point, others may not

BF stated that this discussion has been previously conducted and that the risk assessment area issue is currently being resolved on other OUs. He suggested waiting for resolution on the other OUs. The issue will not be resolved in today's meeting. HA stated CDH is not necessarily on board with the approach. BL does not want to get "too ridiculous" on calculating exposure point concentrations [i.e., that could result in overestimating probable exposures and risks (editor)]. She asked if it was worthwhile to do a future off-site resident since the assessment already includes a future on-site resident. RR defended the future off-site resident as more probable than the future on-site resident and a reasonable maximum off-site exposure. BL suggested that receptors should represent the most probable future scenarios. BF stated that land use projections in OU2 are out of date. RR stated that was all that is available at the present time. Others are being formulated but are not currently available. PL - Should we try to assign probabilities to future scenarios? BL - Yes, qualitatively.

Presentation of Field Activities

SB and JJ presented a review of the field activities conducted over the last several months at OU6. SB began with a discussion of the field investigation process and a discussion of field screening activities. JJ continued with an IHSS-by-IHSS description of the field sampling locations, media sampled, numbers of samples collected, and analytical parameters. HA asked how the boring locations were identified in IHSS 166. SB responded that the aerial photograph was the final document used to locate the trenches, and showed HA the historic photograph. PL explained that the sizes of IHSS 167 and IHSS 165 changed after additional investigation and prior to field sampling. SB, JJ, and PL explained the records search and relocation of IHSS 143. JJ mentioned the addition of sampling locations in IHSS 156.2 based on the aerial photographs. SB and PL also discussed the questions concerning the origin of materials in IHSS 156.2. JJ stated that only one radiation high was detected during radiation screening. That location was on the west side of IHSS 165. JJ stated that no stratification of water was encountered in the ponds during sampling. HA asked if the ponds were sampled during calm conditions, so that the wind would not be responsible for mixing. JJ stated that the ponds were sampled during calm conditions. The thickest sediments were approximately 24 inches thick, but sediments were generally 6 inches to one foot thick. Eleven wells were completed for OU6. None of the well locations encountered sandstone, so paired wells were not installed. Four wells had some water after drilling. PL - More may have water during the spring. Groundwater injection is a low probability scenario because there is no water.

BF asked a question if surficial soils will need to be collected in other areas of OU6 outside the IHSSs. OU2 surficial soil sampling was both biased and random. RR stated that the OU6 data were biased and no other sampling was planned. BF agreed that taking some surface samples from IHSSs and outside the IHSSs is appropriate for an OU-wide risk assessment, but wants to avoid an additional surface soil sampling. He asked if OU2 surficial soil data could be used for OU6 to indicate if the OU6 data are truly biased. RR stated that site-wide assessments would be made in the Comprehensive Risk Assessment, but that the data from OU2 would be reviewed.

DN asked what was being used for background in OU6. RR - the Rock Creek area is being used for surficial soils, the Background Geochemistry Report will be used for other media.

There was a five-minute intermission.

Upon reconvening, PL reviewed the upcoming OU6 field work. Quarterly ground water monitoring, surface water and sediment samples will be collected in the creek sites as described in Technical Memorandum 1 (now Appendix H to the Work Plan). The base flow sampling is planned for next

week (the week beginning March 29) This will be "worst-case" because the water has been standing through the winter and should have high concentrations of soluble constituents The storm event is tentatively scheduled for May 15 BF asked if proposed surface water sampling duplicates sampling proposed for the EE PL said it does not In addition, HPGE radiation surveys will be performed in IHSS 156 2 and in the portion of IHSS 165 outside the PA fence

BF asked about the schedule PL said that the RI Report would be sent to the agencies in July 1994 The original schedule called for delivery on August 4, 1993 BF suggested that if the report is really going to be a year late, DOE should prepare an extension request DOE will have to establish "good cause" for the extension EPA and CDH will be looking for sound justification BF requested that the extension request be sent as soon as DOE has reasonable confidence in the new delivery date PL suggested that the request be delayed until June to allow time to assess the turn-around-time on the radionuclide analyses He said that 80 to 90 percent of the delays were prior to the field work and that the field program had gone smoothly HA acknowledged the efforts made in field implementation and reminded the group that much of the delay was due to late Work Plan approval PL indicated that no provisions were made in the original schedule for procurement time following approval of the revised Work Plan He also mentioned an organizational conflict of interest issue prior to field program, which took 6 to 7 weeks to resolve BF stated that the schedule is a political issue, and the sooner it is resolved, the sooner all can get back to the technical issues

BF ended the meeting with four items

- 1 There should be a meeting similar to the meeting today on the EE It can be combined with OU5 PL said he would schedule the EE meeting
- 2 BF would like another meeting, or at least updates, when the chemical results come in, to see if there are any surprises in the data
- 3 BF would like a schedule for the risk assessment technical memoranda so the agencies can schedule review time They are trying to turn around the tech memos in two weeks
- 4 DOE should work on the extension request and submit it as soon as possible

MEETING MINUTES

February 10, 1994

Attendees Harlen Ainscough (CDH), Bill Fraser (EPA), Jen Pepe (DOE), Ed Mast (EG&G), Neil Holsteen (EG&G), Rick Roberts (EG&G), Susan Buth (WCFS), Kate Power (WCFS), Robert Masterson (WCFS), Jon Pierre Girod (WCFS), John Jehn (WCFS), Pat Westphal (WCFS), Robert Clark (WCFS)

SUBJECT Status report to EG&G, DOE, CDH, and EPA on the preliminary OU-6 data
The meeting was held at Woodward-Clyde Federal Services (WCFS) offices in Denver

The meeting was held to discuss the preliminary OU-6 data results. After the OU-6 data discussion, the proposed method of data aggregation for background comparisons was discussed. Susan Buth opened the meeting with the current status of the OU-6 data. To date, WCFS has verified receipt of 99% of the unvalidated data and approximately 92% of the validated data from RFEDS. Susan continued with a brief overview of the review and history of the OU-6 IHSSs.

Susan then presented the preliminary OU-6 data results. Histograms of the metal and radionuclide data were plotted to check for normal distribution. Background UTL's are also being plotted on histograms to determine if any OU-6 data exceeds background UTLs. UTL's from Background Geochemistry Report were used. Rock Creek background (OU-1 and OU-2) UTLs were used for surface soils. Only background data for upper flow system were used for OU-6 subsurface soil and groundwater. Stream UTLs for surface water and spring/seep UTLs for sediments were used.

Susan summarized the data on an IHSS specific basis. Areas of potential concern are as follows:

- IHSS 141 appears to have some elevated concentrations of americium and plutonium in the surficial soils. It is possible that the solar ponds, which are located to the west of 141, may have contributed to this problem.

- IHSS 165 has some elevated concentrations of americium and plutonium in surficial soils
- IHSS 156 2 has antimony present at depths of 6 feet or greater Plutonium is present in the deepest fill sections of 156 2 which primarily occur along the edges of the IHSS
- Concentrations of plutonium and americium exceeding UTLs were found in IHSS 216 1
- Barium is present in IHSS 166 and is possibly due to barium replacing calcium in the caliche TCE hits are also present in IHSS 166 and are possibly related to groundwater from an upgradient source
- Antimony was found in IHSS 167 1 in the surficial soils primarily in northern half of site The sprinklers used to spray effluent at IHSS 176 1 may have contributed the antimony, which is a component of solder used to join sprinkler connections
- Organics are found at IHSS 143, specifically, suites of PAH compounds are found at shallow depth in borings, at levels <1200 ppb PAHs can possibly be attributed to the fill material (a parking lot is located in IHSS 143 and asphalt may be a possible source for organics) Radionuclides above UTLs are also found at depth in IHSS 143, possibly in the prefill soils Very low levels of volatile organics are also found in the well at IHSS 143, possibly from other sources
- IHSS 142, the A and B series ponds, appear to have moderately high levels of radionuclides hits in ponds A-1, B-2, B-3, B-4 The majority of the metals found were in pond B-1 PCBs appear to be a common contaminant in the ponds

A brief discussion of the results followed

Bill Fraser wanted to know the status of the Technical Memorandums

Ed Mast responded by explaining that the Modeling TM is complete and has been distributed. The Exposure TM is waiting for decisions on data aggregation.

Rick Roberts requested that (EPA/CDH) discuss their views about EG&G's proposed method of comparing OU-6 data to the background geochemistry report. EG&G is concerned about the impacts of having to re-aggregate data more than once. Rick questioned if we could compare the OU-6 data with the geochemistry background report and then make a professional call if needed?

Bill Fraser said that he did not have a problem with the proposed method of OU-6 data aggregation for comparison to background except seeps/spring water for background. There is some concern about introducing a bias. EPA suggests that EG&G run the numbers, cut out complications, and simply show just what is there. Keep process simple enough to make a defensible position, in order to decide if something needs to be done. No one will be scrutinized for professional judgement as long as those arguments are defensible.

Harlan Ainscough suggested that EG&G use similar geologic lithologies in comparing background data with OU-6 data.

Jen Pepe ask why seeps/springs were being used for background comparisons.

Susan Buth explained that stream and seep data is more indicative of wet sediments.

Harlan Ainscough said that subsurface soils have six subsets in the background report. EG&G/WCFS should make a choice and stick with it, and not change the approach if the results are above the UTLs. Use seeps/springs for background for pond sediments if there is nothing comparable in the background study.

A discussion followed on the use of the Rock Creek data for background for surface soils. Bill Fraser stated that we have no choice but to continue to use Rock Creek for background comparison purposes for OU-6 until such time that the Rock Creek data can officially be classified as true background.

Harlen Ainscough and Bill Fraser asked that EG&G re-evaluate the use of background sediment data from seeps to compare with pond sediments

Enclosure

1c File

Feb 10, 1994

WCFS

Initials

Robert Masterson	RPM
Kate Power	KMP
Robert Clark	RLC
Susan Bath	SMB
John Jehn	JAJ
Pat Westphal	PAW
Pierre Girod	JPG

EG&G

Ed Mast

EM

Neil Holsteen

NAH

Rick Roberts

R.R.

DOE

Jen
Jen Pepe

JP

EPA

Bill Fraser

B.F

CDH

Helen Ainscough

HA

Purpose to bring up to date results on OU-6

Intro to OU-6 locations

Ponds - A & B series

141 - Sewage treat sludge historical bkgd

165 Triangle

hist. storage, spills noted

156 Z Soil Dump

hist SO dump truck of contain.

soil

216 I - E Spray Fields

hist - spray off ponds

166 Trenches

Sewage sludge in trenches in SO's and 60's

167 Spray Fields

land fill pond and Bldg 771 spray onto those

Ed Mast

Relocation of 167 Z and 167 S based on air photos and research done in OU-7

143 Old outfall

- 74's runoff from laundry bldg through 143 area

OU-6 Media

SS - Surface Soils

Subsurface Soil - Borings

SW - Surface water

SED's - Sediments

GW - Groundwater

Comparison to bkgd

Metals & Radionuclides

- used histograms to see if normal curve

- put on bkgd UTEL to see any "outliers"

used UTEL's from OU-2

Rock Creek bkgd used in OU-1 and OU-2 was used

used upper flow system for OU-6

- wells completed in alluvium or sands in contact with upper flow system

used Spring/seep UTELs for Sediments - wet mo

HA Subsoils wrong coll all off REP

SMB

SMB: - Visual look at histograms to determine normality

HA: - Are these histograms representing all analyte set results for a particular analyte?

SMB: - Histograms rep. all results for a particular analyte

00-6 SS metals chart shows Analyte # samples Distribution, samples > UTL, No, % of Data > UTL
00-6 Borney Metals
Bo has 1% of Data > UTL - poss. prob

PAW: Are all these borneys done by WAFS
yes

00-6 sed. metals
Silver - Over all ponds
Zinc - 4 ponds occur.
Hg - 5 ponds
SW metals
Hg - 5 ponds

SMB: Surface Soils Radionuclides
141 - down wind of solar ponds Hts Amer: Pl

Borings - Radionuclides
Amer, plutonium

SEDIMENT - Radon
Amer, Pluton. mostly in Ponds
(esp. B-1 Pond)

SW - Radionuclides
Uranium in A-1, A-2, A-3
Am, Pl B1

Summarize by IHSS

IHSS 165
chart # above UTL % > UTL
lg amt radio
aradior-1254
organics - benzene
P.PH compounds < 2 PPB

IHSS 141 (SS only)

Amer
Plut
Metals
Some Uranium

PAW: Some metal may end up below UTL

HSS 156.2

Antimony
St > 6' depth

Rad's 0-6'

Plutonium is located on edges of
156.2 boundary along in the deepest
fill areas on fringes of landfill.

HSS 216.1

PI

Am,

HSS 166

Ba → possible replacement of "calcite"
TTC all hits greater than 6'
possible related to gw because
gw wells have TTC at 6w depth.

HSS 166.3

Ba - 0-6'

MW may want to look at strontium

167.1

Antimony in SS mostly in northern half
of site

KMP does results match what was expected
from Historical data

SMB Yes.

Rick R How did they spray 167.1

SMB Sprinklers

Antimony is part of process of welding
possible connection with sprinklers
since An was found in SS at
spray field

167.2

Antimony in SS

167.3

Antimony and lead in SS

143

> # of organics
suite of PH compounds

← 1200PPB
In Borings organics at shallow depths
poss in fill material - source asphalt
from parking lot

Rads. at depth in prefill surface
in 143

GW at 143

77492 - metals > VTL

tot organics not at very high levels
possibly from another source.

SW Ponds

V, metals

A-1 runoff from hill/sides

B, metals

B-1

V, metals

B-2

V, metals

B-4

low organics in Ponds

EDS

organics, Rads

A-1

Am, P

A-2

Am

B-1

metals, Am,

Some metals and Rads in other Ponds

EDS

inorganics

B-1

majority of inorganics

A-1, A-2, B-1, B-2 chas most contam.
in pond sed.

comment

BF Data from Soil Dump was a little
surprising

HA What Kind of variation from sampling
Plan

SMB

Very little ex 143

JAS

Could not drill in PA fence area

EB

Looked closely at area and decided
we drilled in right spot.

HA

Would you have changed anything
with hindsight

SMB Not for Phase 1 field investigation

HA

Surprised at East Spring field results
since it was in operation for only
2 mos

- Am, Pu in Ponds

SMB

lot of contamination is from outside
OU-6 source OU-7 and OU-4

HA

Closure in OU-4 pickup hot spots
in "ITS" area consolidate under

207B

Relocate waste possibly to Pond

SMB could not find any in trenches

HA
SMB

165 in SS what was found

EMast Asked Harlan if OU-4 is going to be used for a staging area?

HA Possible.

EM Stoller's doing Ecology Tech memo on resampling biota for PCB found in B-1 sed's. Looking to see if PCB bio magnify

BF Where do we stand on Tech. memo

EDM Modeling TM is out aggregate agents
Exposure TM waiting on agent to decide on bkgd

RR Could you (EPH) discuss how EG&G is proposing aggregating

KMP Define what aggregating is being proposed.

EPA - EPA has not come to a decision on agg yet

BF Do not have a problem with OU-6 except using seeps for bkgd concern about introducing a bias

use the upper flowsys. makes sense.

RR Reduced UTL in all compare with bkgd report and make prot devel

KA

R.F

HA

RR.

BF

KMP
PAW

BF

Doing area?

Doing stat test have decision

Problem - how are we going to aggregate data in bkgd.

for making

- effect dist. bkgd methods
- how apply bkgd agg to different OU's
- Can we use one plan for all

memo

aggregate
functions
first

KAP - can reduce VTL by adding column in Qrt to in OU-6 vs bkgd. agg.

R.R. - Impacts of having to reagg. because a part OU was not agg. correctly are of concern

GGG

HA - Should compare approp geology in bkgd agg with geology in OU's

proposed.

ision

IHSS comparison what we are sampling with

-6

RR. direction has been IHSS specific can we make it fit a larger picture

as

BF. Run the numbers, cut out complications
Show just what's there
JUST POINT OUT PROBLEM

ense

KMP One hit is not something to agonize over

z with
level

PAW Sig. problems float to top
Cases where exceeds appear (don't have to mention)
- results not whole story.

BF Keep process simple to make a
definitive position to decide if something needs

Professional

JP Question if Rock ck is usable ~~or~~ for bkqd
Problem with using another set of data
for bkqd

Springys

HA In absence of bkqd data, drop back
to risk assessments

above

Should we (EPA) let them cling to Rock ck
or other bkqd data

BF No choice let ou-6 continue until
a final decision is made

no

it

HA TAG needs a more technical approach
more policy oriented

BF Logical as is working out jurisdictional
work out tech later

age

under UTL

RR. Rock SW, SCUS, etc bkqd
go with what we have for now?

nothing

HA & BF yes (Re-evaluate use of background
sediment data from seeps to compare
with ponds sediments.)

or bkqd?

its

rough and